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ABSTRACT

In a controlled experiment, the IIEP attempted to develop efficient teaching materials in the field of educational planning. Informal instructional materials were compiled from the tape recordings, transcriptions, and summary notes of seminars, lectures, and discussions conducted by the IIEP in its training and research program. This instructional unit argues that the quality of education in a particular country is determined by the extent to which (1) the right combinations of general and specialized education are achieved, (2) the distribution of students at different age levels and proportions of competence fulfills job market conditions, and (3) the school achieves what it sets out to do. A summary of some tape recorded additional comments is included, along with discussion questions and suggested readings. Related documents are EA 003 931, EA 003 932, and EA 003 934-942. (RA)

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No 7 ECONOMIC ASPECTS OF QUALITY IN EDUCATION

by W. Arthur Lewis

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by

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Instructional Unit number IIEP/TM/7/66 is composed of

I. Present Document containing
- a) Complementary text: "Economic Aspects of Quality" page 1
- b) Synopsis of recorded commentary page 21
- c) Questions for further research and discussion page 22
- d) Suggested additional reading page 23

II. Tape - "Economic Aspects of Quality: Additional Comments" given by Dr. Arthur Lewis.
Duration: 23 minutes, recorded at 3 3/4 (9.5)

Student or class should first read text on pages 1 - 20. Subsequently, listen to recorded comments by the author. Suggested questions on page 22 can be used as a basis for a group discussion or may be specifically assigned to the student for further research or study.

ECONOMIC ASPECTS OF QUALITY IN EDUCATION

Quality is a vague word which embraces several characteristics. This paper will group them into three categories, called even more vaguely: breadth, pyramid and success.

Breadth refers to the choice between the vocational and the general in the school curriculum. This choice exists at all levels, from primary to professional.

Pyramid is concerned with proportions in school at different ages, and with the different combinations of general and vocational at each age.

Success refers to the extent to which the school actually achieves with the child what it sets out to do.

Most of these qualities can be measured. We do not have much difficulty in recognizing whether one curriculum is more specialized than another, or in counting the numbers in different types of education or in comparing the effectiveness of two schools which teach to the same curriculum. The problem is not how to measure but how to evaluate. Would a less specialized curriculum be more appropriate? Should one restrict higher education in order to spend more at the primary level? If one can hire more teachers should one use them to improve the student/teacher ratio or to bring more students to school? The vagueness of our measuring rods seems insignificant when compared with our blankness in evaluation.

The market gives some guidance, but not enough. Employers can choose between school leavers with a general and those with a technical education, and insofar as they know what they are doing we can deduce from differences in pay how they evaluate the differences in education. Different schools working to the same curriculum do a better job than other schools. We can compare the difference between the cost of two schools (if more and better teachers and equipment are the main explanation of quality) with the difference between the average earnings of their pupils. But this is not enough.

In the first place, what the market tells us is whether the schools are producing the type of people who fit into the current social situation. But education cannot always fit the young for what they will have to do after leaving school. What kind of schooling would prepare a youngster to work in a mine at an 18 inch seam in water with only a pickaxe? Or what is the appropriate schooling for spending one's life cultivating two acres with a hoe? The assumption that the school must prepare the child for his environment is not always valid. Many progressive children and parents look to the school not to fit them for their environment, but on the contrary as a window through which they may escape from the job or the village or the social class which is otherwise ordained for them. Modern education fits modern societies. When modern education is introduced into backward societies, backward politically (e.g., feudal) or backward technologically (e.g., hoe agriculture) the consequences can be revolutionary. This is one reason why reactionary governments limit education. But even well-meaning governments may have to limit education if they cannot achieve social change at the pace they would like. Thus in much of rural Africa, where modern education is incompatible with the current agricultural system, how rapidly to expand primary education is a real problem. One alternative -- adapting the education to the agriculture -- is undesirable (at issue is not merely the curriculum but also the approach to life); and the other alternative -- adapting the agriculture to the curriculum -- has to proceed relatively slowly. Since it is important for education to change society as well as to adjust to it, one cannot evaluate education simply by the market price which its products can command.

A second difficulty is that market prices measure value only if they are freely determined by the equation of demand and supply. Now the scale of salaries in underdeveloped countries is not freely determined. The government is the largest employer of certain groups, and fixes their salaries arbitrarily. Neither is the market cleared by prices; many shortages and surpluses exist. Calculations based on the average earnings in a certain occupation do not justify a larger output if a surplus already exists at current prices. The economist handles this problem conceptually by using "shadow prices" which clear the market, instead of actual prices. Conceptually these shadow prices may be determined by mathematical programming. Models have been made combining input-output analysis (to take account of the fact that education consumes a significant proportion of its own output) with linear programming. If one knows the educational requirement of each job in the economy, or alternatively knows the relative values of different types of education, the

model will determine exactly how many people should receive each type of education. In practice we do not have this information. Even if we had, the appropriate model would be not linear but non-linear, and we would probably not be able to solve the problem. So while conceptually the problem yields to economic analysis, in practice exercises of this kind are founded on guesses.

A third problem is that even accurate market evaluation would not be enough. The market measures some benefits but not others. If we educate a deaf child his earnings go up, so we can measure both the cost of schooling for deaf children and also the difference between the earnings of representative samples of educated deaf and uneducated deaf. But there are also unmeasured economic benefits -- the educated deaf are less of a material burden to their families and friends. And there are also uneconomic benefits -- first the extra personal satisfactions which the deaf derive from having received an education, and secondly the extra satisfaction which all society derives from knowing that its deaf members have been given the same chance for education as anybody else. All attempts to measure the value of education come up against the fact that education has values which are not reflected in the market place.

This is where the distinction between education as an investment good and education as a consumer good ceases to be useful. Suppose that every member of the community could benefit by receiving a college education up to age 22, and desired such an education. And suppose that only half the jobs to be done actually needed or benefited from such a long period of education. Could one deduce that only half the population should receive a college education? In a poor country, which could not afford college education for all, calculations of this kind would be highly relevant in making decisions. But in a rich country, where the alternative might be to produce more television sets or other knick-knacks, education would be valued for its own sake, irrespective of its contribution to productivity. The economist belongs in a land of scarcity, but not in a land of plenty.

This paper confines itself to the problems of poor countries, where the cost and productivity of education cannot be neglected, but it makes no claim that these are the decisive considerations. Its main task is to define the various aspects of quality, and note the issues which arise as each aspect is considered. Judgements are offered from time to time, unsupported by statistical evidence. The paper should be read mainly as a list of topics about which we need to have more information or analysis.

1. Breadth

In preparing people for life, education has to perform several functions:

a. Socialization; teaching the child to live with others; teaching social rôles; culture patterns; rules of behaviour; history, and so on.

b. Teaching needed facts about the physical world: some science, some geography.

c. Imparting some understanding and appreciation of our artistic heritage -- literature, music, art, drama.

d. Providing intellectual tools; reading, mathematics, languages, logical analysis and so on.

e. Training the body, physical exercise, co-ordination of hand and eye, athletic sports.

f. Teaching specialized skills for use in adult life, whether in the home, like cooking, or in the market place.

Everybody agrees that the school must do all these things; the argument is only about proportions. In this paper we confine ourselves to the discussion about the relative weight to be given to specialized skills, as against all the other functions.

The first factor which determines the relative proportions of general and specialized education is the length of time available for schooling. If children spend only five years in school, the emphasis is likely to be put on general education rather than on specialized skills. Girls will be taught to read rather than to sew. One defence is that this will be their only opportunity to learn to read, while they can learn to sew later. But one's attitude to the general values of education, as distinct from specialized skills, will also influence the decision. Bigoted employers have always preferred that the schools should concentrate on skills rather than on general education, both because they attach more importance to skills and also because they fear that general education may not be compatible with the kind of social framework which they wish to preserve.

But any educational institution anywhere, at any level, feels that it could do a better job (give a better background and also more specialized knowledge) if only it had its students for just one more year.

Next, it is not easy to agree where to draw the line between specialized training in school and on-the-job training. This line varies with almost every job and every community. The longer the period of schooling the more the school programme eats into what could otherwise be done by on-the-job-training. Since schooling is expensive, poor countries do, through shorter schooling followed by apprenticeship, forms of training which richer countries tend to take into formal establishments, not merely because they (the richer) can afford it, but also because, having decided to lengthen the period of schooling they have to put more specialized training into the curriculum. However, cost apart, the appropriate division between schooling and apprenticeship is always subject to debate. The medical practitioner used to be trained almost exclusively on the job. Then came a phase in which he was trained exclusively in medical school, and could practice immediately after passing his examination. Now a period of compulsory on-the-job training after examination has been restored, and beyond this young doctors tend to spend longer and longer in "residencies" before starting general practice. The schools also have their prejudices. Since the theorist has more snob prestige than the practitioner, the schools tend to be snobbish towards teaching practical subjects. The current pressure of engineering schools to teach science rather than engineering is supported by many good arguments, but it is not without influences of this kind.

From the point of view of the student, early specialization can be a disadvantage. A child of 12 or 14 or even an adult of 18 is not well placed for choosing his life's work, and may try to postpone choice as long as possible. In general the best paid occupations are those whose specialized training starts latest. Hence ambitious parents and children want to stay in general education as long as possible. This is one reason why vocational programmes often come to grief. Secondary grammar schools may be packed, while secondary technical schools have vacant places. Or if the students go into the vocational courses (train to be teachers, agricultural assistants, laboratory technicians and the like) they use them only as a substitute for general education, and as a stepping stone to more remunerative jobs. Philosophers may thunder that the schools are not preparing the students for life, but what philosophers want from the schools and what students and parents want from the schools are not necessarily the same.

Actually the student's desire for flexibility is matched by society's need in those economies where the nature of the jobs to be done is subject to change, whether because jobs change their relative importance, or because the technique of doing any particular job changes with time. Education precedes a working life which may last fifty years. It ought to lay a foundation which will enable a worker to change his skills as opportunities change. A stable society can afford high specialization in its school curriculum (a caste system is the extreme form of stable education), but a rapidly changing society must put its emphasis instead on general education.

The foregoing points all stress the claims of general education, but since the problem is one not of absolutes but of relative proportions, they do not destroy the equally strong case for formal specialized training. Speaking historically, as the length of the schooling period lengthens, general education increases; while, as the relative numbers receiving education grow, the schools take over more and more of the specialized training which was previously done on the job. In the U.S.A., where the goal is to remain in school until age 25, specialized training has been pushed into graduate schools. In Britain children with similar ambitions begin to specialize at 14 and have considered it normal to leave school at 21 with a Bachelor's degree; this is now altering on the American pattern as the period of education lengthens. As the net widens, more vocations come into the schools. Sometimes this improves the craft; technique is changed because the technician has a better general education. More often, this is merely a matter of convenience. If the children are to stay in school, and do not want to absorb any more general knowledge, they may as well be instructed in useful crafts. Hence historically education tends to become both more general (vertically) and more specialized (horizontally).

2. Pyramid

Since the relative weight given to specialization depends on the length of the school course and the width of the net, it is directly related to the pyramid, which is the relative proportions in school at each age. These two aspects may now be considered together.

One's attitude to the angle of the pyramid tends to be related to what one wants of an educational system. Those who value education mainly for its non-economic attributes want to spread it as widely as possible. They would rather spend money giving everybody some general education than spend the same amount to give a few a better and more specialized education.

Those who emphasize more the economic aspect of education are impressed with the superior contribution of the most highly educated. They tend to call for more students at the top of the pyramid rather than at the bottom. A third group say that their desire is that each child should have the education for which it is capable. This would produce a pyramid similar to the distribution of native ability. For example, this is the basis used by the Robbins Report for calculating how large the university population should be in Britain; no attempt is made to relate these numbers to job opportunities. As we have seen, this basis is more relevant to a rich than to a poor society.

If one starts from job opportunities, the angle of the pyramid depends on the degree of economic development, and more especially on the size of the subsistence sector of the economy. The subsistence sector has little use for highly trained university graduates, apart from doctors, and cannot afford to pay even those whom it could use. The capacity to absorb the highly trained increases steadily as the subsistence sector diminishes. Hence, in an underveloped country, it is as easy to be producing too many (in terms of absorptive capacity) at the top (e.g., Egypt) as it is to be producing too fee (e.g., Malawi).

Many countries have made manpower studies assessing their needs for high level skills. Using rough bench marks, African countries show a need for about ten per cent of the age cohort to be receiving secondary education at age 16, and about one per cent to be receiving higher education at about age 21. However these or any other figures are subject to the important qualifications that absorptive capacity is not a fixed concept. As the numbers at high levels increase, they take over jobs formerly done by people with lower levels of education, who in turn drive out people from still lower levels. An economy can therefore absorb any number of educated people, given time for job qualifications to be adjusted upward and relative salaries to be adjusted downward. As in the United States, when the number with top level education grows, it is the people with the lowest level of education (or none) who find it hardest to get a job.

Manpower surveys, therefore, do not tell us what the pyramid should be. They tell us how many the market will absorb given current job qualifications and relative salaries. If we produce more they will find work sooner or later even if in less prestigious jobs than they expected, and for lower pay. Since upgrading the qualifications for jobs is one of the major sources of growing productivity, one should always produce more skilled people than the manpower survey shows to be needed at current levels of expectation. As we have seen, conceptually we could find out just how many more by non-linear programming, but this is not practicable.

Manpower surveys have also to make some allowance for desired imports or exports of skills. Most countries will prefer to train their own people (whether at home or abroad is a separate question) rather than to import foreigners, but this is not always practicable within the relevant time span. As for exporting, the "brain drain" is not always unintended. Some countries have for a long time educated more persons than they could absorb, and supplied their neighbours (e.g., Egypt, Dahomey, Sierra Leone). Overpopulated countries from which people are migrating (e.g., Puerto Rico, Malta) may well decide that it is better to educate their people before exporting them -- this is indeed tending to become one of the conditions on which countries will take immigrants.

Though one can make some case for educating substantially more high-level people than the manpower survey requires, the argument cannot be pressed far in a poor community. Since it would clearly be inequitable to ignore the majority of children while spending lavishly on the few, one can make more persuasively the opposite case for limiting the output at the upper ends of the pyramid within the neighbourhood of the figures indicated by the manpower survey, so that additional sums can be spent at the bottom of the pyramid.

The case for a wide base does not rest only on equity. The future of any country depends on finding its best brains and educating them. Since natural ability is randomly distributed, the only way to find the best brains is to give everybody a chance. Hence, even if the top is very narrow, the bottom should be wide -- the age distribution of education in a very poor society should then look more like a rectangular hyperbole than like the side of a pyramid. Universal primary education may not be practicable, for reasons we shall come to in a moment, but the search for the best brains justifies heavy spending at that level.

The quality of the pyramid depends not only on its shape but also on the system for choosing the students at each level. Ideally the choice should depend only on the child's ability to profit by education, with the most able chosen at each stage. In practice, many other factors intervene (class, religion , income, race, political affiliation, and so on). Universalistic societies seek the ideal; devise "objective" tests of ability, and provide scholarships and bursaries so that income may not be a barrier to education. Since the achievements of excellence depends on the quality of the students no less than the quality of the teachers, the importance of this point needs no emphasis.

Primary Education, to say age 12. How big should the base of the pyramid be in an underdeveloped country with a large subsistence sector? This subsistence sector is the problem. There is no tenable argument against primary education for children who will earn their living outside the subsistence sector. This gives a minimum goal of 50 per cent of children in primary school just as rapidly as teachers and schools can be mobilized for this purpose. For the rest, the economy needs a simultaneous approach; building rural schools while simultaneously reforming the agrarian structure so that it can absorb and hold the products of the schools. Thus one would expect the passage from 50 to 100 per cent of children entering schools to take at least thirty years. Those West African states which have moved from 30 to 90 per cent in the past ten years are now beginning to observe the results. Educators will hope that the benefits of education (however rudimentary) may triumph over the costs of rural dislocation.

Secondary level. According to manpower budgeting, in countries at low levels of development about ten per cent of the population should at age 16 still be receiving mainly a general education. Ten per cent of these will go on to university, perhaps a quarter to post-secondary vocational schools, and the rest straight into employment. Most African countries have not yet reached this goal of ten per cent in general secondary education; many Asian countries have already gone far beyond it, while allowing their primary education to lag.

The other children who stay in school beyond age 12 need a substantial vocational mix. This is the stage where the school garden, the workshop and the domestic science unit can be helpful. The drop-out rate is high. It would probably be better to spend money on improving the vocational facilities at this stage (quality before quantity) than to spend on trying to increase the number of children staying in school. In British African terminology this means that it is now more important to improve the facilities of the "middle" schools than to increase the number of their students. The justification for this judgement is the state of the market. Thirty years ago there was a shortage of candidates for clerical jobs, and only a small market for craftsmen, so efforts to attract students to vocational studies were unsuccessful. Today the clerical jobs go to products of the "grammar" schools, and the market is crowded with unskilled primary school leavers. At the same time, the progress of public and private investment creates a demand for skills of many kinds. Low levels of skill induce employers to install expensive automated machinery in substitution for skill. As a result in many underdeveloped countries high levels of investment are now associated with abnormally low increases in employment. To spend more on vocational education is one of the better remedies for unemployment.

Post-Secondary Vocational. In all underdeveloped countries this is the weakest link in the chain. At this stage much that is now done by on-the-job training would be done better institutionally. This means more schools for training technicians, practical engineers, junior agronomists, teachers, secretaries, bookkeepers, public service clerks, police officers and so on. Some of these schools will be run by employers (government, mining companies, etc.) for their employees only (e.g., police), while others will be open to students before making employment contracts. There is room for varied arrangements between government and employers as to who finances or manages these schools. The importance of having adequate facilities of this sort is underlined by the fact that the shortage of people suitable to be foremen and supervisors is one of the marked characteristics of underdeveloped countries.

The ease with which these sub-professional schools can recruit students depends on the alternative opportunities for schooling. In countries where general secondary education is underdeveloped, these schools cannot insist on full secondary education as a minimum standard of entry; they have to recruit some primary school leavers, and to adjust their curricula accordingly. They then tend to attract some very bright students, who use them only as a substitute for secondary education on their way to higher things. As the opportunities for general education improve, this situation reverses itself. These schools can then raise their entrance requirements, but have difficulty in competing with the university for good students. It is not uncommon for the university to be flooded with students of the humanities, law and commerce while the technical schools have empty places, and industry is short of skills. The problem can be tackled in various ways; by raising the pay of technicians; by bringing the technical schools within the university system to give them prestige (an American solution which horrifies the British mind); by limiting the number of students accepted by overcrowded university faculties; or by offering more generous scholarships and bursaries to students in the technical schools than to those who go to the university.

The University. Universities can operate at four different levels: The junior college and technical training level, the liberal arts level, the highly specialized level, and the professional level. Where to site and how to mix these levels is a problem which different countries tackle differently.

The British have so far kept the technical and junior college level out of the university (except for the teachers, who broke in after the

second World War). The junior college work is added to the secondary schools, giving the "sixth form" a character of its own. The technical colleges operate on their own. There is pressure in underdeveloped countries to put both the technical college and the sixth form into the university; partly because the university has usually the best administrative talent for supervising higher education; partly, in the case of the technical colleges, to give them prestige; and partly in the case of the sixth forms, because it is thought to be easier and cheaper to centralize this work in a few centres than to try to add it separately to each secondary school (cost figures on this issue would be welcome).

Putting all this work into the universities also has disadvantages. The university becomes enormous, and problems of administration, morale, discipline and self-government multiply. Then there is the fear of the effect on standards; if entry and exit standards are lowered to accommodate this work, a downward pull is exerted on all the rest of the university's work. Finally, the universities fear the effect on their costs. The staff required to teach the highly specialized and the professional courses are very expensive both because they compete in a world-wide market, and also because they require expensive research facilities. They cost more than the people required for liberal arts courses, who in turn cost more than the people required to teach in junior college. It is difficult for a university to make appropriate distinctions between these different grades of teaching staff, especially if it is using public funds, and is required to operate in accordance with published salary scales. The wider the university system the greater the probability that it will pay too little at top and too much at the bottom.

Despite these disadvantages, the pressure in underdeveloped countries to put all post-secondary education under university control will probably prove irresistible. Presumably the best administrative solution will then be to have under the university umbrella nearly autonomous administrations for the different levels, keeping programmes and teachers quite separate from each other.

Liberal Arts. About half the students who will reach the level of a Bachelor's degree will go into jobs which require only a general education; the other half will go into jobs which require a specialized or a professional education. British higher education runs these three side by side, but U.S. education is pushing specialized and professional education into graduate schools, thereby lengthening the period for completion of specialized studies, and requiring a prior general education. The British, on the contrary, demand some degree of specialization from all university students, even

those who take a "general" degree. Thus the one approach makes a general education the core of higher education, while the other approach locates the core in specialization. As we have already seen, the length of the course and the width of the educational net are the keys to this dispute. It is not necessary to stay in school until age 26 to become a good doctor or a good physicist, but if a country can afford to keep its professionals and specialists studying for that long, then it is feasible to require a great deal of general education for them (the two systems differ more in general than in specialized content). The width of the net determines the character of the general education. The greater the proportion of young people completing college, the wider will be the range of jobs for which a college degree will be the requirement, and therefore the more general the general education must be. Also, since the average intellectual quality must fall as the percentage entering college reaches double figures, it ceases to be feasible to demand of every student that he must "reach the frontier of knowledge" in some subject. One may predict that British university education will follow the American pattern, while believing that the British pattern of running general, specialized and professional courses simultaneously is more appropriate for poor countries at this stage. However, having regard to the high cost of specialized and professional courses, these countries would probably do better at this stage to establish separate colleges for their "liberal arts" or "general" or "pass" degrees, with cheaper staff, lower staff/student ratios and longer teaching hours than apply in the colleges for "honours", specialization and professional courses.

The high cost of specialized and professional courses raises the question whether poor countries would not do better to send as many of their students abroad for these courses as proves feasible. Their own colleges could thus be confined to liberal arts and general degrees, which can be done relatively cheaply. The specialized and professional courses are expensive because the first-rate teachers needed for such work operate in an international market; their salaries, allowances, and travel costs tend to raise the cost per student beyond the cost in developed countries. Moreover, if students can find places abroad, the tuition fees they pay are normally only a fraction of the cost; and there are plenty of scholarships and opportunities for working one's way through college. Against this, there are three points in favour of educating at home rather than abroad. First, a large proportion of those who go abroad do not return home; the economics of this point depends on whether cheapness is offset by numbers. Secondly, a country benefits from having a corps of highly specialized teachers living in its midst, studying its problems and contributing to its public and cultural life. And thirdly, in some courses what the student learns abroad is not as relevant as what he might learn in his own university. This is particularly relevant to professional training.

The Professions. African professions still model themselves on British curricula, but will sooner or later face the same problems as professions in other underdeveloped countries. From some points of view the training in the subjects of the profession should be more intense. The doctor or engineer in a rural district needs to know more than his counterpart in New York, where there are laboratories and specialists who can be consulted within minutes. At one end he needs the intellectual equipment of the specialist; at the other he also needs the expertness of the technician, since the juniors under him are not well trained, and need his guidance and training. This argues for more detailed knowledge of his profession. At the same time, he needs a broader background knowledge. He needs more knowledge of the disciplines which underpin his subject, for he will meet many unfamiliar problems which he must solve for himself by returning to first principles. He also needs more knowledge of society, since he moves in and out of different cultures, and is himself playing a rôle -- that of the intellectual -- which is novel in his society. This is the kind of situation where the educator's reaction is "if only we had them for another year".

The financial pressure, however, is in the reverse direction: to cut the length of the course and concentrate on the specialist skills, so that more professionals can be produced for the same money. When such a large countryside has to be covered, two half-trained professionals do more good than one fully-trained professional.

The best remedy may be to adopt both solutions: reduce the proportion of fully-trained professionals (say doctors) and greatly multiply the number of technicians at the lower level (say medical assistants). Simultaneously upgrade the training of each; of the technician because he will be sent into the countryside on his own and therefore needs to know more; and of the professional because the technician will now take over much of his routine work, making the professional more a consultant and supervisor than a general practitioner. Thus the number of "half-trained" people is greatly increased, but not at the cost of debasing the training of the professional, which is, on the contrary, stiffened. This difficult problem needs more informed discussion than it has received. 1/

1/ I have discussed this subject much more intensively in an article "Education for Scientific Professions", Daedalus, Spring 1962.

Controlling the Pyramid. We have been considering the "ideal" shape of the pyramid. Even when the authorities know what shape they would like, they are still far from achieving it. The proportions in which students offer themselves are not the proportions which the authorities wish to adopt. At the primary level developed countries may have to enforce attendance; the underdeveloped tend to be flooded by more boys than they can cope with, and far too few girls. The demand for general secondary education everywhere exceeds the capacity of public secondary schools, so very many children are in private schools some of which hardly deserve the name. Technical schools tend to have empty places. In the universities Law, Economics and Humanities are overcrowded, while Science, Engineering and Agriculture do not have enough students.

Since money is a magnet, it is always possible to devise schemes for getting more students into parts of the system which are undermanned. Keeping them out of overcrowded parts is more difficult, for political reasons. Many fine secondary school systems and universities have been ruined in recent years, especially in Asia, because the government did not feel able to control the pyramid.

3. Success.

The third aspect of a system's quality is how effectively it achieves its goals. Given the pyramid and the curriculum, how successful is the teaching?

Success depends partly on how tough the problem is, and partly on the resources devoted to it.

The problem is particularly tough when the culture of the school and the culture of the home are at odds with each other. In Western Europe school and home have a common culture, except for children who are moving upward in social class. This is not so in underdeveloped countries. In such countries all educated people tend to be more scientific, secular, libertarian and disposed towards change than are the members of the traditional establishment, and the thought-patterns of the teachers will be different from those of the parents of most of the children. In Africa there is also a difference of language even at the primary level. One reason for the prevalence of learning by rote in such countries is the child's difficulty in grasping the full meaning of texts written by members of a different culture in a different language.

The problem is also tough when the students are not well chosen. A university which takes all comers cannot reach the same standard of excellence as a university which selects its students carefully. Hence quality of performance depends on the students being selected appropriately at all levels, and matched with appropriate curricula.

Given the task, success depends on resources. The ideal in education is to tailor the teaching to the capacities and interests of the individual child; to let the genius and the slow proceed each at his own pace; to offer a wide choice of subjects; to make special (though not necessarily separate) provision for the deaf, the blind, and those handicapped in other ways. The ideal is unattainable, if only becuase it is too expensive. How far one gets will depend on how much is made available.

It will depend on the quality of the teachers and how much education they have themselves received; this will be governed largely by what salaries they are offered. It will depend on the number of teachers, which determines the staff/student ratio, and therefore how much attention each child receives. On the quantity and quality of the physical resources: buildings, laboratories, libraries, workshops, playing fields, musical instruments and so on. And much also depends on whether the children live at home or at school. This is not just a question of separating the child from the home environment in order to put the school's stamp on him. It may also make a difference to the amount of studying the child can do after school hours, if home conditions (lack of light, space, quiet, or co-operation) do not favour study. And in sparsely populated rural areas availability of dormitories may determine the size of the school, and therefore the variety of its curriculum.

Efficient use of these resources is tested in various ways. Some students indicate their dissatisfaction by dropping out of their courses. The educational testers devise examinations for the student to take. The administrator looks for waste; and must also consider the best allocation of funds as between different factors of production. Finally, there is the social test, which evaluates the competition between quantity and quality.

The drop-out test may not indicate the student's dissatisfaction; he may drop out for financial or family reasons. Even if he drops out for educational reasons, the teacher may welcome his departure and may even have been responsible (by failing him) for bringing it about. Some drop-out rate is necessary for the health of an educational system, just as a bankruptcy rate is necessary for the health of an economic system;

it indicates that a misallocation of resources is being terminated. Many state institutions are not allowed to select their students properly, and defend their standards by having a high drop-out rate. Use of the term "wastage" in this connexion is misleading. If the educational system is planned for some students to leave after six years, some after nine years, some after twelve years and so on, and all students act according to plan, we get a step pyramid; if instead some of the students leave at the end of each year we get a regular pyramid. A step pyramid is not necessarily better than a regular pyramid. It may be desirable to design the system to take in everybody at the bottom, to keep only one per cent at the top, and to have a hyperbolic decline. To give every child two years of primary education is not necessarily bad in comparison with giving fifty per cent of children four years of primary education. This is the kind of problem to which the market gives an answer, since we can compare the average earnings of people according to number of years of education. If the authorities decide that they want a wide base and narrow top, the system should be planned in a series of short self-contained steps, so that students do not disappear halfway through a long programme (thus it is better to have some two-year junior colleges than to have a high drop out from a four-year college course).

If the ideal is to tailor the course to each child, standard examinations do not exactly measure success. Many teachers resist having their students take tests set by outside bodies. Nevertheless, the case for outside examinations, to test effective use of public funds, is overwhelming. Countries which do not have countrywide examinations tend to have many very poor schools.

The administrator's task, to root out waste, is more difficult than the examiner's. The core of his work is comparative costing, which reveals how each school differs from its fellows in expenditure under each category. However, differences merely suggest that one should seek special circumstances; they do not necessarily prove either waste or economy. Choosing the proper combination of resources is not easy. Given an increase in the budget for a particular school, with number of children constant, is it better to spend on hiring better teachers, on improving the building, on buying more equipment, or on building a dormitory for some of the students? The answer will vary from school to school. Teachers are not much help in solving this problem; they ask for more of everything, starting with salary increases. One sees so many obvious mistakes when travelling from place to place that it seems doubtful whether administrators have as yet devised for themselves a system for evaluating marginal adjustments in factor proportions.

Finally comes the choice between quantity and quality. How important is quality? One can keep down the cost of secondary education by many means; having a high ratio of non-graduate teachers for the lower forms; keeping down the range of subjects; having smaller schools and cutting out dormitories; and so on. Learning is to a considerable extent a function of time; is it better to give more students an opportunity to spend more time in school at a reduced cost per student year? Do the larger numbers made possible by multiple teaching systems (monitors, programmed learning, television) more than compensate for what is lost through reducing the teacher/student ratio?

Every educational system meets the situation by having some institutions which operate at very high levels of quality, along with others at lower levels. Even the poorest country needs some high level institutions, partly because some jobs demand the highest level of training, and partly because the maintenance of standards in the educational system itself demands the presence of some institutions which reach high levels. So there is a "pyramid" of quality as well as of quantity. To some extent, this is even institutionalized. If there is pressure to have more doctors, one keeps the medical standard, but invents a new lower category of medical assistants. If students press at the door of the university, one establishes junior colleges. If the demand for secondary places threatens the secondary schools, one invents the "modern secondary school". This is a good solution, but it is not final. However many levels one may create, at each level there will be better and worse, and the choice will pose itself. Is it better to have a large number of poor institutions, whose standards one hopes eventually to raise, or to concentrate resources on a smaller number of students in fewer schools of higher quality? Or rather, since it is inconceivable that we need to have all institutions at the same standard of excellence, what is the appropriate shape of the pyramid of quality?

As we have seen, the free market gives answers to this sort of question, since it prices students taught in different schools. If one can agree on tests of quality, one can compare the average earnings of students of similar average I.Q. and social class, taught in different schools and going into similar occupations. Such tests could be (either separately or in some weighted combination): average performance of the school at examinations, qualifications of teachers, staff/student ratio, quantity of buildings and equipment, or any other kind of school rating which educational testers may devise. If the differences in prices corresponded exactly to the differences in costs, we would conclude (with the usual assumptions) that the pyramid was right. This kind of statistical exercise is always open to debate, but is nevertheless suggestive.

The market's answer is important but not final, since we value quality in education and its opposite -- the opportunity given to large numbers -- more than the difference which either makes to productivity. Ultimately this kind of argument has always to be settled at the political level.

4. Conclusion

From the economist's point of view, it is not difficult to define what one seeks in a school system -- the right combinations of general and specialized education, of numbers at different age levels, and of different proportions of competence. Neither is there conceptual difficulty in defining what is right by comparing costs with the market values of different combinations. Data are scarce, but could be collected, and despite the imperfections of the price mechanism could be given some meaning. The biggest obstacle is that even the economist does not believe that market prices are the appropriate values to use. We cannot therefore avoid handing the problem over to those philosophers who deal in more fundamental values.

5. Summary.

1. Quality can be subdivided into breadth, pyramid and success. Each of these can be measured, costed, and priced in the market. But the market price is not decisive.

   a. Because education is meant to change society and not merely to adapt to it;

   b. Because market price does not reflect the true scarcity of resources; and

   c. Because there are other values to education with which the market is not concerned.

2. It is in the social interest, and the interest of the child, to keep education general rather than vocational for as long as is practicable, but this is subject to

   a. How long a period of schooling the community can afford; the longer the schooling, the more general the curriculum.

   b. The dividing line between on-the-job training and formal schooling in vocational skills; and

   c. The width of the educational net; the wider the net, the greater the proportion of students in vocational programmes.

3. One can calculate how many students are required at different educational levels. Overproduction at the top probably helps to increase productivity. But in the interest of equity, and of searching for talent, it is probably better to universalize education at the bottom before beginning to overproduce at the top.

4. Even the poorest society should pass 50 per cent of its children through primary schools. Progress from 50 towards 100 per cent should be phased with the reconstruction of agriculture.

5. Currently in Africa it would be better to improve the quality of middle schools than to increase their student numbers.

6. Post-secondary vocational training is grossly underdeveloped. It is necessary to raise the prestige of the institutions which offer such training, and to offer generous scholarships, so that they may compete with the universities for students. Whether to include such work under the university umbrella is largely a practical question.

7. In the interest of keeping down costs, liberal arts training should be kept separate from more specialized and professional training. How much of the latter to do at home, rather than abroad, is a matter for calculation. Poor countries cannot afford to require that a liberal arts training be taken before proceeding to specialized or professional study.

8. Professional courses need adaptation to local circumstances. The ratio of professionals to assistants should be smaller than in developed countries, but this requires that the training of both be upgraded.

9. Given the curriculum, the success of the educational system depends partly on the extent to which school and home share a common culture, partly on care in the choice of students, and partly on the quantity of resources (teachers, equipment, buildings, hostels) available per student.

10. Educational experts test the efficient use of resources by testing the students in various types of examination. Educational administrators compare the amount of resources used by different schools to get the same results, and check the effect of substituting one factor of production for another at the same total cost.

11. A high drop-out rate is not necessarily a sign of inefficiency; but if the authorities want a pyramid of this shape, they should plan the curriculum in short steps.

12. There is a pyramid of quality, just as of quantity. Any system has a few first-class institutions and many of lower quality. The question whether to increase the number or improve the quality of the lesser institutions can be answered by the market, since one can calculate whether the earnings of graduates from different institutions correspond to differences in the cost of teaching. However, the market's answer is not decisive.

SYNOPSIS OF RECORDED COMMENTARY

Professor Lewis's comments concern the third part of his paper headed "Success".

From the point of view of an economist, three basic considerations can be made with regard to quality in education.

1) The economy of a country requires not one but several qualities of schools. It needs to have a few first-class quality establishments, it needs a large number of medium quality schools and also mediocre ones, because the alternative may well be no schools at all. Even if everybody should agree that a Rolls Royce is the best car, the automobile industry must turn out lower standard cars. Quality cannot be separated from cost.

2) At a given cost, quality of education can often be improved by changing the composition of inputs, i.e. of production factors of the school system (teachers, buildings, equipment). It is far from certain that better results can always be achieved by hiring better teachers and by paying them higher salaries. Better teaching methods and modern educational equipment will in the future years represent the most powerful factor of higher quality. Every industry had made great progress in the past years except education. Here too this progress must be realized through a better combination of resources.

3) The economist can sometimes show that more and better education justifies the additional costs by even higher additional returns, in other words that money spent on good education can be more productive then money spent on other things. Often, however, this is not the case, which in itself does not prove anything. Economic productivity is only <u>one</u> of the available arguments in favour of educational expenditure.

Questions for further research and discussion

1. What in your opinion are the practical implications for the educational planner of the conclusions drawn by Professor Lewis in his paper and his recorded comments?

2. At one point in his comments Professor Lewis makes an analogy between the concept of quality in education and the concept of quality in the automobile industry. Would you agree with his comparison, and would you agree with his argument that an educational system in a developing country needs also mediocre schools? Why?

3. To what extent do you consider the quality of output of higher (secondary in particular) education in your country appropriate or inappropriate as compared with the purely economic requirements and needs of the country? As an educational planner, what remedies would you suggest (taking into account especially the cost implications)?

4. What type of research would you consider as indispensable in order to provide a full answer to the proceeding question?

Suggested additional reading

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Peters, R.S. "Quality in Education". IIEP/S7/4.

Aron, R. "Sociological comments on concepts of quality in education". IIEP/S7/5.

Philp, H. "The evaluation of quality in education". IIEP/S7/6.